



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,947	12/09/2003	Hardayal Singh Gill	SJO9-2000-0070US2	6756

32112 7590 08/08/2006

INTELLECTUAL PROPERTY LAW OFFICES
1901 S. BASCOM AVENUE, SUITE 660
CAMPBELL, CA 95008

EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
----------	--------------

3729

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

88

Office Action Summary	Application No. 10/731,947	Applicant(s) GILL ET AL.	
	Examiner A. Dexter Tugbang	Art Unit 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-26 and 37-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/9/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election **without traverse** of the invention of Group II, Claims 37 through 43 in the reply filed on June 9, 2006 is acknowledged.

Claims 21 through 26 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claims 37-43 are pending for examination as noted below.

Priority

2. It is noted that this application appears to claim subject matter disclosed in prior Application No. 09/772,780, filed on January 29, 2001. A reference to the prior application must be inserted as the first sentence(s) of the specification of this application or in an application data sheet (37 CFR 1.76), if applicant intends to rely on the filing date of the prior application under 35 U.S.C. 119(e), 120, 121, or 365(c). See 37 CFR 1.78(a). For benefit claims under 35 U.S.C. 120, 121, or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of all nonprovisional applications. If the application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference to the prior application must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000,

Art Unit: 3729

after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference was submitted in an oath or declaration or the application transmittal letter), and the information concerning the benefit claim was recognized by the Office as shown by its inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge under 37 CFR 1.17(t) are not required.

Art Unit: 3729

Applicant is still required to submit the reference in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the specification or an ADS. See MPEP § 201.11.

Specification

3. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

4. The abstract of the disclosure is objected to because the content is not directed to the claimed subject matter of a process of making (as recited in at least Claim 37). Correction is required. See MPEP § 608.01(b).
5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Art Unit: 3729

The following title is suggested: --A Method of Manufacturing a Magnetic Head with Thin Gap Layers--.

Claim Objections

6. Claims 37 and 38 are objected to because of the following informalities:

In Claim 37, the phrase of "a magnetic shield" (line 3) should be replaced with --the first magnetic shield--; "said gap layer" (line 4) should be replaced with --said first gap insulation layer--; and "the" (line 5) should be removed.

In Claim 38, the phrase of "a substrate layer" (line 3) should be replaced with --the wafer substrate--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoujii et al 5,722,157 in view of Hsiao et al 5,999,379.

Shoujii discloses a method for fabricating a magnetic head (see Figures 8A through 8K) comprising: depositing a first magnetic shield layer (e.g. 18) upon a wafer substrate (e.g. 16); depositing a first gap insulation layer (e.g. 20) upon the first magnetic shield layer; fabricating a

Art Unit: 3729

sensor (e.g. 28) upon the first gap insulation layer; fabricating electrical leads (e.g. 30, 31) proximate to the sensor, the leads providing electrical current to the sensor during operation; fabricating a second gap insulation layer (e.g. 32) upon the electrical leads and the sensor; and fabricating a second magnetic shield (e.g. 34) upon the second gap insulation layer.

Shoujii does not teach that the second gap insulation layer includes a first gap insulation layer portion and a second gap insulation layer portion where the first and second gap insulation layer portions are made up of a plurality of multilayered laminations.

Hsiao teaches forming a second gap insulation layer upon a sensor (e.g. SV in Fig. 37) that includes a first gap insulation layer portion (e.g. 260) and a second gap insulation layer portion (e.g. 217) where the first and second gap insulation layer portions are made up of a plurality of multilayered laminations (e.g. 231, 251, 217, 260). The purpose of the multilayered laminations with the first gap insulation layer portion and the second gap insulation layer portion of the second gap insulation layer is to prevent electrical shorting between the lead layers and the shield layers (col. 3, lines 3-6 and lines 33-36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the second gap insulation layer of Shoujii by forming it upon the sensor with the first gap insulation layer portion and the second gap insulation layer portion where the first and second gap insulation layer portions are made up of a plurality of multilayered laminations, as taught by Hsiao, to advantageously prevent electrical shorting between the lead layers and the shield layers.

Art Unit: 3729

9. Claim 38, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoujii et al in view of Hsiao et al, as applied to claim 31 above, and further in view of Otani 5,340,793.

Shoujii, as modified by Hsiao, discloses the method of manufacturing the magnetic head as relied upon above in Claim 37.

Regarding Claim(s) 38, 39 and 41, Hsiao further teaches that the second gap insulation layer includes substeps of: depositing a thin film of metal (e.g. 231) on the wafer substrate and oxidizing the thin film metal to form a first metal oxide lamination (col. 6, lines 62+); and depositing a second sheet of metal (e.g. 251) on top of the first lamination and oxidizing the second sheet of metal to form a second lamination (col. 7, lines 46+). Hsiao further teaches that the multilayer structure can be formed of an oxide of aluminum (col. 9, lines 1-2) or tantalum (col. 6, lines 47-48) and that it can comprise of at least 5 laminations of oxide layers (e.g. 243, 217, 251, 231, 260).

The modified Shoujii method does not mention repeating steps c and d (e.g. depositing and oxidizing the second sheet of metal) to achieve the multilayered laminated structure of a desired thickness.

Otani discloses a piling process of oxide layers that repeats steps of depositing a second sheet of metal on top of a first sheet of metal or lamination, oxidizing the second sheet of metal, and repeating these steps to achieve a multilayered laminated structure (see Fig. 2a and col. 3, lines 47+). The benefit of such a piling process allows deposition to occur in a flat manner (col. 2, lines 29-32) and solves the problems associated with uneven surface layers (col. 1, lines 52-57).

Art Unit: 3729

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Shoujii and Hsiao, by utilizing the piling process that includes repeating steps of depositing the second sheet of metal on top of the first sheet of metal and oxidizing the second sheet of metal, as taught by Otani, to advantageously allow deposition to occur in a flat even manner.

10. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoujii et al in view of Hsiao et al and Otani, as applied to claims 37 and 38 above, and further in view of Tsunemitsu et al 3,862,017.

Shoujii, as modified by Hsiao and Otani, discloses the claimed manufacturing method as previously discussed in Claims 37 and 38 above. The modified Shoujii method does not teach a nitride.

Tsunemitsu teaches that insulating layers can be made of oxides or nitrides (col. 2, lines 6-12) that can include tantalum (e.g. 17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the material of the multilayer structure of Shoujii, Hsiao and Otani, by using a nitride, as taught by Tsunemitsu, to provide electrical insulating properties.

11. Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoujii et al in view of Hsiao et al and Otani, as applied to claims 37 and 38 above, and further in view of Latta et al 4,526,629.

Shoujii, as modified by Hsiao and Otani, discloses the claimed manufacturing method as previously discussed in Claims 37 and 38 above. The modified Shoujii method does not teach that the preferred thickness of each lamination, or layer, is 10 to 20 angstroms.

Art Unit: 3729

Latta teaches that the preferred thickness of each lamination (e.g. each oxide layer) can be less than 3 nm (i.e. less than 30 angstroms), which would be inclusive of the claimed range of 10 to 20 angstroms (see Claims 2 through 4 of Latta). The benefit of Latta's preferred thickness provides a pattern of layers that have insulating properties with high quality and low cost (col. 2, lines 33-36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Shoujii, Hsiao, and Otani, by forming each lamination, or layer, with the preferred thickness of Latta, to positively provide insulating properties with high quality and low manufacturing cost.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

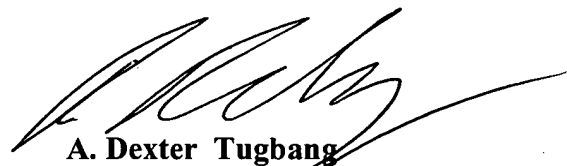
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570.

The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3729

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



A. Dexter Tugbang
Primary Examiner
Art Unit 3729

August 1, 2006